

## Eros Satellite Plan Awaits Approval

Washington—Interior Dept.'s entry last week into the satellite field is based on assumptions that include finances, spacecraft experiments and launch vehicle, all of which are still to be approved.

Eros, the acronym for earth resources observation satellite, is designed to study global resources for the department's U.S. Geological Survey. National Aeronautics and Space Administration's Office of Space Science and Applications has advised the Survey on methods of establishing a satellite system, but there was some surprise among NASA officials at the timing and ambition of the project.

The Survey hopes that industry can design a 300-lb.-class satellite to be launched on a Thor-Delta vehicle into a nearly polar, sub-synchronous orbit from the Western Test Range.

Two satellites probably will be built, one a backup, although the Survey hopes to orbit more if its plans are successful. Initial satellite would carry only a television system to transmit data on water and vegetation, and later spacecraft would provide more detailed instrumentation including infrared sensors.

Project cost was placed at about \$20 million, and a launch date was set for 1969. Survey officials, however, acknowledged privately that \$20 million probably was too little, and that 1969 probably was too optimistic.

They said that tentative plans are to issue requests for proposals to industry for definitive studies of the system within three months, but added that funds for the project had yet to be approved by the Budget Bureau.

NASA officials also said that a launch vehicle was not available and that the schedule did not seem realistic.

Among the areas to be investigated by Eros when it is flown are cartography, environmental geology and mineral resources, hydrology and geography.

**Declass Review by Nima / DoD**

# High-Resolution Camera Proposed for Eros

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**RCA device, for which 3,500-line TV capability is claimed, would be multipurpose sensing system for resources satellite**

Washington—High-resolution camera developed by the Radio Corp. of America is being proposed by RCA as a multipurpose sensing system for the Earth Resources Observation Satellite (Eros) announced by the Interior Dept.

RCA's Astro-Electronics Div. at Princeton, N. J., has developed and is testing the new camera, which it claims has a resolution capability of more than 3,500 television lines in laboratory tests. That compares to a commercial television capability of about 525 scan lines.

The Interior Dept.'s U.S. Geological Survey wants to use the Eros in sun-synchronous, nearly polar orbit to photograph the entire earth as a means of compiling data on natural resources (AW&ST Sept. 26, p. 27). The project has yet to be formally funded, although officials have put a \$20-million cost on their plans and have set a 1969 launch.

Launch would be on a Thor Delta vehicle from the Western Test Range.

RCA's satellite television system is compatible with the Eros, according to program officials at Princeton. They said the TV camera is a logical extension of work by the division that includes sensors for Tiros, Nimbus, Lunar Orbiter and military applications.

The RCA advanced high-resolution system now weighs 700 lb. and has a growth capability of about 200 lb. more, to make use of the Thor Delta's weight-lifting capacity.

The system has not been flight-tested as a unit, although similar high-resolution capabilities are known to be used on Air Force satellites. Company officials refused to discuss the relationships between their military work and the Eros high-resolution camera they have proposed, but the Interior Dept. is said to be ready to sacrifice some potentially higher resolution to avoid political difficulties with other countries.

As a result, ground resolution will not be as great as the RCA camera's suggested capabilities although such other potential users as the Agency for International Development (AID) have expressed interest in using data from the Eros to support programs of helping agricultural production overseas.

The RCA system would:

- Provide an earth-pointing, three-axis stabilized satellite using an inertial wheel similar to the Tiros.

- Have a one-year lifetime during which photography could be carefully programed and controlled from the

ground for selective photography of terrain below on any particular pass.

- Provide more than one camera, for multispectral capability and redundancy.

- Have on-board tape recorders to store data and dump information over established ground receiving stations to avoid the need for a new system.

- Use solar cell power, from paddles similar to those of Lunar Orbiter.

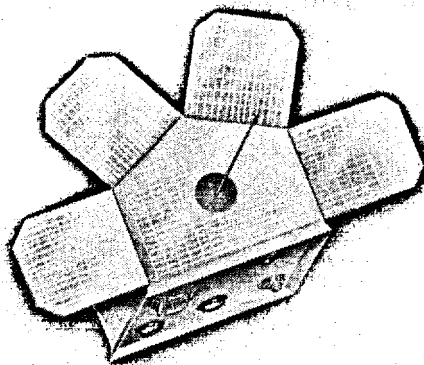
RCA's photo coverage plan allows for 10% overlap on each picture sequence. A single area can be completely covered and then rephotographed every 17 days.

Eros will make 15 revolutions daily, during which its system would record

450 photographs. The on-board tape recorder would hold 30 min. of film. The capability of turning the cameras on and off from the ground during non-essential periods permits the recorders to dump data and be readied for another photographic pass.

In laboratory tests, RCA engineers took photographs made from space and from aircraft and placed positive transparencies on a light box. They photographed the positive transparencies with the TV camera and displayed the pictures on a high-resolution kinescope from which they made slides showing 2,500 scan lines of resolution.

Continued testing has convinced the engineers, they said, that 3,500 lines could be reproduced.



Natural resources satellite proposed by Radio Corp. of American would use solar panels for power, although the number of panels may not be four, as shown in this artist's concept. Configuration illustrated here is based on Tiros hardware, with panels similar to those on the Lunar Orbiter spacecraft. RCA's Astro-Electronics Div. says that it could build this satellite for the Interior Dept.'s U. S. Geological Survey in two years, once the earth resources observation satellite program is funded.